

"PROMOTING ENERGY EFFICIENCY AND RENEWABLE ENERGY IN SELECTED MSME CLUSTERS IN INDIA"

To develop and promote a market environment for introducing energy efficiency and enhanced use of renewable energy technologies in process applications in the selected energy-intensive MSME clusters, United Nations Industrial Development Organization (UNIDO) in collaboration with Bureau of Energy Efficiency (BEE) is implementing a project titled "Promoting Energy Efficiency and Renewable Energy in selected MSME clusters in India" funded by Global Environment Facility (GEF) and co-financed by Ministry of Micro, Small and Medium Enterprises (MoMSME) and Ministry of New and Renewable Energy (MNRE).

Installation of VFD to the existing ghee process pump in a dairy industry

Objective

To minimize the energy consumption by the ghee process pump by regulating its speed as per requirement.

Implementation

Installed a variable frequency drive (VFD) to the existing ghee process pump to reduce the energy consumption.

Principle

Ghee process pump motor in a dairy unit is subjected to frequent part load operation due to variation in load (or quantity).

VFD is a specific type of adjustable-speed drive which controls the speed of motor and the quantity / flow of material according to the requirement, resulting in reduction in power consumption resulting in energy saving.



Savings

₹ 1,27,764



Investment

₹ 82,000



Pay Back

8 months



Unit Profile

Dudhsagar dairy is a unit of the Mehsana District Co-operative Milk Producers' Union Ltd. The dairy was established in year 1960. Current processing capacity of the dairy is 25 lakh litre per day.



Benefits

- Improved life of the pump
- Better control of the operation
- Reduction in energy consumption and energy costs

Outcomes



16,380 kWh of annual energy saving



₹ 1,27,764 of annual cost saving



13.43 T of CO₂ reduction per year (0.82 kg/kWh)



Replication Potential

In all the dairy units with variable load on pumps

Cost Economics

Energy savings per hour	2.6 kWh
Energy savings per day	46.8 kWh (18 hr/day)
Energy saving per annum	16,380 kWh (350 days/yr)
Cost savings per year	₹ 1,27,764 (₹ 7.8/kWh)
Investment cost	₹ 82,000
Simple Payback period	8 months



Calculation

Energy savings per annum (kWh/year) = (Energy consumption before implementation - after implementation, kWh/day) * no of working days/year

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Unit

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